4.
Nutrition Management of Non-Insulin Dependent Diabetes Mellitus by Primary Care Physicians in Indiana: Practices, Attitudes, and Barriers to Use

Indiana Diabetes Control Program

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EXECUTIVE SUMMARY

Nutritional management is considered the cornerstone of therapy for the patient with non-insulin diabetes mellitus (NIDDM). However, few systematic investigations have been conducted of the nutritional care provided in the primary care setting, particularly for individuals with diabetes. We surveyed by mail family practitioners, general internists, and general practitioners practicing in Indiana to better understand their use, involvement in, perceived value of, and potential barriers to implementing nutritional therapy for their patients with NIDDM.

The target population surveyed was a sample of 1000 family practice, general practice and general internal medicine physicians within the state of Indiana. From this population, 579 (58%) returned questionnaires. Of these, 427 met eligibility criteria.

The data collected from this survey suggest that the majority of primary care physicians do attempt to utilize diet therapy in the treatment of their patients with NIDDM. On average, physicians report conducting most of the counseling themselves for approximately one-third of their patients and they refer an average of 68% of their patients to a diet counselor. The health care professional to whom they most frequently refer their NIDDM patients for nutrition education and therapy is a registered dietitian; however, availability varies as a function of practice location and speciality.

The analysis of potential barriers to implementing diet therapy with NIDDM patients suggests that access to professionals and/or programs, from either the physician's or patient's perspective, is not viewed as problematic. Moreover, the qualifications or expertise of referral sources is not perceived to be deficient. Likewise, the majority of physicians do not believe that the training in diet therapy they received during medical school (or lack thereof) poses a significant problem in implementing diet therapy with their NIDDM patients. Clearly, the most frequently mentioned barriers to the successful implementation of diet therapy in persons with NIDDM are patient-centered, particularly patient nonadherence. The five most frequently cited factors in order of the percentage of respondents that marked it as either a significant or overwhelming problem are: 1) patient doesn't follow the prescribed diet, 2) patient's diet not supported by the family, 3) patient not interested in diet therapy, 4) patient can't afford diet education/counseling, and 5) inadequate insurance reimbursement for diet education/counseling provided to physician.

Recommendations

- In spite of the perception by our respondents that they have adequate training in the implementation of diet therapy, most medical training programs offer little or no training in behavior change strategies. Such strategies are essential in achieving the life-style modifications inherent in diet-based therapy. If physicians are to effectively counsel patients, programs need to be developed for physicians that incorporate training in techniques for facilitating patient behavior change.

- Further study of patient-centered factors, especially nonadherence, is needed. A follow-

up study of patients that compares their perceptions and experiences with nutrition management would be a valuable adjunct to the present survey. By combining the results of such a study with those of the physician survey, effective patient-directed programs could be developed. Patient-focused programs not only need to address knowledge, skills, and behavioral change issues specific to initiation of diabetes nutrition therapy, but should incorporate training in diet maintenance techniques as well.

- Many physicians do not know whether their referral source is a CDE. Since CDEs have specialized training in diabetes management in addition to their primary degree (often an RD or RN), they represent a valuable resource for primary care physicians. A program to increase awareness of the role and availability of CDEs could ameliorate this problem.

- Physicians need to be updated in the latest recommendations for nutrition prescriptions and interventions. The majority of physicians report recommending an "ADA diet" with their newly diagnosed NIDDM patients. While "ADA diet" could be used to connote a generally healthy and well-balanced meal plan, the 1994 Nutrition Recommendations (American Diabetes Association, 1996) recognize the benefit of individualizing nutrition care and advocate against a "one-size-fits-all" approach to diet therapy with NIDDM patients. As new materials become available, such as the new series of nutrition education tools jointly sponsored by the American Dietetic Association and the American Diabetes Association, broad-scale efforts need to be made to make physicians and other health care professionals aware of these resources.

- There appear to be significant differences in reported practices and barriers by specialty and practice location. The reasons for these differences need to be explored; pending the results of such a study, policy and educational programs could be designed to address problematic areas.

Introduction

Nutritional management is considered the cornerstone of therapy for the patient with non-insulin diabetes mellitus (NIDDM). In addition to the problems of nutritional balance, persons with NIDDM frequently have obesity, hypertension, and hyperlipidemia, and thus must have nutritional recommendations expressly tailored for these needs. In recognition of the complexity of making nutritional recommendations for these persons with diabetes, a recent position statement from the ADA suggests that "there is no one 'diabetic' or 'ADA' diet," and advises that every person with diabetes deserves a diet tailored to their unique needs (American Diabetes Association, 1996). Recommendations also suggest that a nutritionist be included in the team managing persons with diabetes, and that ongoing nutritional counseling be provided at least every six to twelve months (Monk et al., 1995).

While team management, including a nutritionist, has become standard in large diabetes care centers, few persons with diabetes receive their care in these settings. According to the 1989 National Health Interview Survey, less than 8% of all ambulatory visits of persons with diabetes were to diabetes specialists, while 72% of all ambulatory visits were to a primary care provider (Janes, 1996). However, few systematic investigations have been conducted of the nutritional care provided in the primary care setting, particularly for individuals with diabetes. In a national survey of primary care providers, almost 70% stated that they provided nutritional counseling to 40% or more of their general patient population (Kushner, 1995). Eighty-seven percent said that they provide counseling themselves, and 68% said that they spend 5 or fewer minutes discussing dietary changes with their patients, but this was less time than they felt was needed. In a self-report survey regarding diabetes care, 56% of Minnesota family practitioners said they played a direct role in dietary education and 93% referred patients to a dietitian for dietary education (Peterson, 1994). In a survey of diabetic patients of Michigan primary care providers, 38% of the patients received their diet information from a physician and only 53% of the patients with NIDDM not using insulin had received any formal nutritional counseling (Anderson et al., 1994). In a community survey of diabetic patients, 15% of the patients had never seen a dietitian; 53% of these patients reported that they were not referred by their physician, and another 20% did not believe it was important (Arnold et al, 1993). Only 8% could not afford to see a dietitian. Nutritional knowledge was strongly related to the provision of formal nutritional counseling, suggesting that the educational process provided in the physicians' office may be less than effective.

Chart audits of patients in primary care settings have reported similar rates of nutritional counseling for patients. A systematic audit of care in the Indian Health Service noted that counseling was obtained by 57% of the 60,000 Native Americans and Alaska Indians with diabetes in the past year (Mayfield et al, 1994), and 21-50 % of the patients with diabetes in New York City community clinics had not received any nutritional education in the prior year (Wylie-Rosett et al,1992).

A number of barriers have been identified to the provision of nutritional counseling in the

primary care setting. In a national survey of primary care providers, doctors reported that the top six potential barriers were lack of time, lack of patient compliance, inadequate materials, lack of training in counseling skills, deficit of knowledge about nutrition, and lack of adequate reimbursement (Kushner, 1995). We have found no systematic investigation of barriers to the use of nutrition therapy in the management of diabetes.

We undertook this investigation to better understand primary care physicians' use of nutritional therapy for patients with NIDDM in Indiana. Specifically, we sought to better understand the providers' use and perceived value of nutritional counseling, the extent of their involvement in counseling and referral efforts, and the external barriers (e.g. access, financing) in obtaining nutritional consultation for their patients with NIDDM. To this end, we conducted a mailed survey of a randomly-selected sample of primary care physicians in Indiana.

Methods

Sample Selection

Because primary care physicians' practices and attitudes regarding nutrition management of NIDDM were chosen as the focus of the study, the target population consisted of physicians specializing in family practice (FP), general internal medicine (IM), and general practice (GP) practicing in Indiana. The sampling frame was constructed using three primary sources: (1) an existing Diabetes Research and Training Center (DRTC) database originally compiled in 1993 and used to conduct census surveys of FPs, IMs, and GPs; (2) the American Medical Association physician master file, which includes both AMA members and non-members; and (3) the Indiana University Medical Center marketing file, which includes the Indiana State Medical Association membership, rosters from all Indiana hospitals, and the names of physicians who have referred patients to Indiana University Medical Center. These sources yielded a combined list of 3691 physicians specializing in FP, IM, or GP.

We used stratified sampling with proportional allocation to select a probability sample for receipt of the questionnaire. Previous research has shown differences in practice behavior between medical specialties (Kraft et al, in press; Kenny et al, 1993; Conry et al, 1991; Cherkin et al, 1986); assuming that such differences operate in the current study and to increase the accuracy of the analysis, we decided to stratify by specialty using the specialty codes assigned to physicians in the sampling frame. Physicians were sampled using the following distribution: 44% FP, 11% GP, 10% FP or GP (one of the source databases did not distinguish between FPs and GPs), 28% IM, and 7% unknown (specialty code did not distinguish the primary care specialty). Using this distribution and assuming a response rate of 60%, with 10% of the respondents ineligible for analysis, we calculated that we would need to survey at least 993 physicians in order to estimate the desired parameters within 2%. One thousand physicians were eventually selected after stratification. Analyses were performed so that response rates were adjusted to and reflected the distribution of the sampling frame.

Instrument Development

The survey instrument consisted of a mailed questionnaire. In order to maximize the validity and reliability of the questionnaire, its development involved several phases. First, the study investigators defined the objectives and content areas to be addressed in the questionnaire. Next, an "expert" panel was convened. The panel consisted of dietitians, primary care physicians, experts in survey methodology, and a communications specialist. The panel helped refine the objectives and content areas and made suggestions regarding the questionnaire format and design. Using these recommendations and input from the investigators, an initial draft of the questionnaire was prepared. In order to further refine the instrument and to increase its content validity, a second expert panel, consisting of FPs and IMs from various regions around Indiana, was assembled. The panel's comments were incorporated into a revised draft of the questionnaire, which was then pre-tested with a group of physicians from central Indiana. After the pre-test, the questionnaire's design was finalized and the questionnaire printed.

The questionnaire addresses four major areas: demographic and background information, counseling and referral practices, attitudes toward nutrition management, and perceived barriers to the use of nutrition management. A copy of the final instrument is included in Appendix A. The questionnaire incorporates straightforward questions (e.g. "Please estimate the percentage of your NIDDM patients...") and case study-based items, for which physicians read a brief case synopsis and then answer questions based on the case. Most questions are close-ended/forced choice, with the exception of questions regarding proportions of patients and one question regarding perceived barriers, which are open-ended.

Statistical Methods

The analyses described below were done using SUDAN, a statistical program which adjusts for the differential response in the five strata of the sampling frame. Demographic data are given for the actual responders. All other results have been adjusted from the sampling frame. The SUDAN program was also used to perform chi-square testing on the adjusted values for contingency tables. These include analyses by specialty, practice location (urban vs. rural), and age of physician (as approximated by year of graduation from medical school).

Procedure

The survey was implemented using methods suggested by Dillman (1978) with some modifications. Three waves of questionnaires, each including a personalized cover letter and pre-paid return envelope, were mailed; the first two waves were sent first class and the last wave was sent via certified mail. Three weeks after the first wave, a reminder postcard was sent to all non-responding physicians. Four weeks after the second wave, letters from community physicians on the primary care physician panel were sent to non-responding physicians to encourage them to participate.

Unique identification numbers were assigned to all physicians in the sample in order to track response and avoid duplicate mailings. Only the project manager had access to the personal information associated with each ID number; no personal information (i.e., name or address) was

entered with questionnaire data. All questionnaires were logged in a computer database upon receipt; responding physicians did not receive further mailings. Physicians were classified as "unable to locate" and removed from the mailing list if their mailings were returned unopened and the U.S. Postal Service and Indiana Medical Licensing Board had no forwarding address. Physicians were also removed from the mailing list when we received information via mail or telephone that they were retired, deceased, or otherwise not in active practice.

Data entry was performed by the Biostatistics Core of the Diabetes Research and Training Center.

Results

In the following section, selected results from the survey are summarized. Specific frequencies are listed for each survey item in Appendix B.

Subjects

The target population surveyed was a sample of 1000 family practice, general practice and general internal medicine physicians within the state of Indiana. From this population, 579 (58%) returned questionnaires. Of these, 427 met eligibility criteria, which are the following: (1) primary specialty of FP, GP, or IM; (2) graduation from medical school before 1994; (3) report being in active practice, and (4) report currently treating NIDDM patients. The distribution of eligible responses is listed in Table 1 (below). Their average year of graduation from medical school is 1975. Collectively, the respondents treat an appreciable number of patients with NIDDM with 66% reporting that they care for more than fifty annually.

Table 1: Distribution of eligible responses

Specialty	Sampled	Responded	Response rate
FP	441 (0.44)	232 (0.54)	52.6%
FP/GP	100 (0.10)	34 (0.08)	34.0%
GP	110 (0.11)	39 (0.09)	35.5%
IM	281 (0.28)	116 (0.27)	41.3%
Unknown*	68 (0.07)	6 (0.01)	8.6%

*The source databases were presumed to contain only FPs, GPs, and IMs, but some physicians had missing specialty codes during the sampling process.

When questioned about their practice environment, the largest percentage (35%) report being in solo practice**. Twenty-six percent are in large group practice, 23% are in small group practice, and 9% report practicing in a hospital clinic.

Source of dietary education and counseling

Respondents were asked to estimate the percentage of their NIDDM patients for whom they themselves provide dietary and education services. For the entire population, the mean response was 38%. When physicians do not counsel patients themselves, the reason they cite most often is the availability of a good diet counselor or education program (82% of respondents). In fact, physicians report referring a large percentage of patients to some type of diet counselor (mean percentage of patients: 65%). For respondents who indicated that they refer their patients for counseling and education services, the majority (76%) refer to a registered dietitian. Respondents were also asked to indicate whether the person(s) they refer to is a Certified Diabetes Educator (CDE), an indicator of specialty training and evaluation by the American Association of Diabetes Educators. Approximately 42% report yes, with 41% indicating that they did not know whether their referral source was a CDE.

In analyses to determine whether there are differences in referral practices as a function of practice location, specialty, or year of graduation from medical school, there is a trend for urban physicians to refer to dietitians more frequently than rural-based physicians and rural physicians to refer more frequently to nurse practitioners ($p=.09$). FPs, GPs, and IMs differ in terms of the type of professional to whom they actually refer the most ($p=0.005$); FPs are most likely to report referring their patients to a CDE ($p<0.001$).

Availability of programs and/or services for dietary education and counseling

Respondents were asked to indicate what types of dietary education and counseling professionals and/or programs are available to them for referral. The majority of respondents report that registered dietitians (86%) and hospital-based programs (67%) are readily available. Fewer respondents report availability of an American Diabetes Association-recognized education program (35%), a CDE (32%), or office nurse (26%).

There are also significant differences between physicians in urban vs. rural practice settings with urban physicians indicating greater access to ADA recognized diabetes education programs ($p=.03$) and Certified Diabetes Educators ($p=.006$). In addition, there is a trend for greater access to nurse practitioners by rural-based respondents. With respect to specialty, IMs are more likely to report having registered dietitians and nurse practitioners available for referral compared to GPs and FPs ($p<0.001$), whereas FPs are most likely to report having ADA-recognized programs, CDEs, and hospital-based programs available ($p<0.03$). Differences by year of graduation also exist, with younger physicians (year of graduation after 1981) being more likely to report access to registered dietitians and CDEs compared to older physicians (year of

**Practice setting frequencies are unadjusted for responder demographics.

graduation before 1973 or between 1973 and 1981) ($p<0.025$).

Perceived barriers to using diet therapy with NIDDM patients

Respondents were asked to indicate the extent to which they feel several factors are problems when using diet therapy with their NIDDM patients using the following five point scale: not a problem; small problem; moderate problem; significant problem; and overwhelming. The factors questioned can be conceptually grouped into five general categories: 1) cost, 2) accessibility to services, 3) physician training 4) patient psychosocial, and 5) quality of diet education provider services.

The following list reflects the five most frequently cited factors in order of the percentage of respondents that marked it as either a significant or overwhelming problem:

- Patient doesn't follow the prescribed diet (75%)
- Patient's diet not supported by the family (40%)
- Patient not interested in diet therapy (38%)
- Patient can't afford diet education/counseling (30%)
- Inadequate insurance reimbursement for diet education/counseling provided to physician (25%)

In addition to the scaled responses, respondents were asked in an open ended question what they felt was the "biggest problem you face when considering diet therapy for your NIDDM patients?" The majority of respondents (53%) indicated some form of patient noncompliance with the prescribed diet, followed by patient attitudes concerning diet-based therapy.

Analysis of demographic factors associated with reported barriers reveals that there are significant differences by specialty. FPs and IMs were more likely than GPs to report finding insurance issues ($p<0.01$), patient's ability to afford education ($p<0.001$), and inconvenient counselor hours ($p=0.001$) to be problems. IMs were more likely than GPs or FPs to indicate that counselor location ($p=0.005$) and medical school training ($p=0.019$) to be problematic. Finally, GPs were more likely than FPs or IMs to report "lack of access to materials" as a problem ($p=0.032$). It is important to note, however, that these problems were noted by a substantially smaller number of respondents compared to problems related to patient-centered factors.

Case Studies

In addition to the data described above, respondents were asked to indicate how they would approach the management of two NIDDM patient case studies. The first case describes a 58 year old female, newly diagnosed with NIDDM who is overweight. The majority of respondents (59%) felt that diet therapy alone would not be effective in achieving their therapeutic goals with this patient and 45% suggested that they would initiate oral hyperglycemic medications. In spite of the apparent lack of faith in diet only therapy, the majority of physicians still focus considerable attention on weight management: 97% would recommend weight loss, 78% would set specific weight loss goals, 86% would recommend a specific level of caloric intake, 92%

advise an exercise program, and 80% make a referral to a diet counselor. The three diet plans most often recommended by physicians were the "ADA diet" (87%), a low fat diet (58%), and a reduced/low calorie diet (50%).

The second case study describes a 62 year old woman with NIDDM of three years duration who is overweight, in poor glycemic control, has mild hypertension, and has received nutrition education from an office nurse. A significant percentage of the physicians (48%) would continue the current diet therapy. However, 43% of respondents felt diet therapy would not be likely to contribute to this patients diabetes control and virtually all (97%) suggested that they would initiate oral hyperglycemic medications. If diet therapy were altered smaller percentages would utilize the same strategies applied to the newly diagnosed patient: 80% of physicians would recommend weight loss, 72% would set specific weight loss goals, 75% would recommend a specific level of caloric intake, 92% advise an exercise program, and 72% make a referral to a diet counselor.

Summary and Recommendations

The data collected from this survey suggest that the majority of primary care physicians do attempt to utilize diet therapy in the treatment of their patients with NIDDM. On average, physicians report conducting most of the counseling themselves for approximately one-third of their patients; they refer an average of 68% of their patients to a diet counselor. The health care professional to whom they most frequently refer their NIDDM patients for nutrition education and therapy is a registered dietitian.

The analysis of potential barriers is noteworthy. Access to professionals and/or programs, from either the physician's or patient's perspective, is not viewed as problematic. Moreover, the qualifications or expertise of referral sources is not perceived to be deficient. Likewise, the majority of physicians (63%) do not believe that the training in diet therapy they received during medical school (or lack thereof) poses a significant problem in implementing diet therapy with their NIDDM patients. Physicians most often cite patient-centered factors (particularly patient nonadherence) as problems to implementing nutrition therapy in the management of NIDDM.

Examination of the practice patterns, attitudes, and barriers to nutrition therapy reported by this sample of primary care physicians suggests an interesting paradox: on average, physicians report practices consistent with nutrition therapy guidelines, yet they seem to have moderate or little faith that nutrition therapy will be effective. They perceive that patients cannot or will not follow dietary prescriptions. This situation probably leads to significant frustration on the part of physicians and patients alike.

These observations suggest the following recommendations:

- In spite of the perception by our respondents that they have adequate training in the implementation of diet therapy, most medical training programs offer little or no training in behavior change strategies. Such strategies are essential in achieving the life-style

modifications inherent in diet-based therapy. If physicians are to effectively counsel patients, programs need to be developed for physicians that incorporate training in techniques for facilitating patient behavior change.

- Further study of patient-centered factors, especially nonadherence, is needed. A follow-up study of patients that compares their perceptions and experiences with nutrition management would be a valuable adjunct to the present survey. By combining the results of such a study with those of the physician survey, effective patient-directed programs could be developed. Patient-focused programs not only need to address knowledge, skills, and behavioral change issues specific to initiation of diabetes nutrition therapy, but should incorporate training in diet maintenance techniques as well.

- Many physicians do not know whether their referral source is a CDE. Since CDEs have specialized training in diabetes management in addition to their primary degree (often an RD or RN), they represent a valuable resource for primary care physicians. A program to increase awareness of the role and availability of CDEs could ameliorate this problem.

- Physicians need to be updated in the latest recommendations for nutrition prescriptions and interventions. The majority of physicians report recommending an "ADA diet" with their newly diagnosed NIDDM patients. While "ADA diet" could be used to connote a generally healthy and well-balanced meal plan, the 1994 Nutrition Recommendations (American Diabetes Association, 1996) recognize the benefit of individualizing nutrition care and advocate against a "one-size-fits-all" approach to diet therapy with NIDDM patients. As new materials become available, such as the new series of nutrition education tools jointly sponsored by the American Dietetic Association and the American Diabetes Association, broad-scale efforts need to be made to make physicians and other health care professionals aware of these resources.

- There appear to be significant differences in reported practices and barriers by specialty and practice location. The reasons for these differences need to be explored; pending the results of such a study, policy and educational programs could be designed to address problematic areas.

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Appendix A: Survey Instrument

Diet Therapy and Non-Insulin-Dependent Diabetes Mellitus

A Survey of Indiana Physicians

Sponsored by the Indiana State Department of Health in collaboration with Indiana University

Estimated time needed to complete this form: 7-10 minutes

This questionnaire will take TEN MINUTES to complete. Results will be used in the re-evaluation of training programs at the Indiana University School of Medicine and in program decisions at the Indiana State Department of Health. There are no "right" answers – we want to know what you think. Thank you for your help!

DEFINITIONS

This survey focuses on non-insulin-dependent diabetes mellitus and diet therapy. For the purposes of this questionnaire we are using the following definitions:

Non-insulin-dependent diabetes mellitus (NIDDM) – Also known as type II diabetes; generally diagnosed after the age of 30; highly correlated with obesity; treated with diet, exercise, oral antidiabetic agents, and/or insulin.

Diet therapy – Nutrition management of diabetes involving patient education and counseling. Designed to facilitate diabetes control through appropriate food choices.

Please answer the questions based on your own background and experience with NIDDM patients. All information will remain entirely confidential.

■ What is your primary specialty? *(Please check one answer.)*

___Family practice ___General practice

___General internal medicine ___Other_____

■ When did you graduate from medical school? 19 _____

■ Do you routinely provide patient care (i.e., are you in active practice)?
(Please check one answer.)

___ NO —> If NO, you need not complete the remainder of this questionnaire. Please return this form in the envelope provided.

___ YES —> Go to next question . . .

■ Are you currently treating patients with NIDDM? *(Please check one answer.)*

___NO —> If NO, you need not complete the remainder of this questionnaire. Please return this form in the envelope provided.

___YES —> If YES, approximately how many people with NIDDM do you treat per year?
___1-25 ___26-50 ___51-100 ___>100

■ In general, when you counsel NIDDM patients about diet, which of the following describe(s) what you do? *(Please check all that apply.)*

___Obtain information on patient's current eating behavior

___Develop meal plans with patient

___Provide educational brochure or book

___Provide diet exchange sheet

___Set specific calorie intake goals

___Other_____

___Set specific weight goals

___Do not counsel patients myself

■ Please estimate the percentage of your NIDDM patients for whom you yourself provide the majority of the dietary education and counseling: _____%

■ When you don't counsel patients about diet yourself, which of the following describe(s) your reason(s) for not counseling about diet? *(Please check all that apply.)*

___Don't have time

___Not reimbursed for diet counseling

___Do not have training to do diet counseling

___Other_____

___Good diet counselor /education program available

___N/A – always counsel patients myself

___Not comfortable doing diet counseling

■ Which of the following types of professionals and/or programs are available to you for dietary counseling/education referral? *(Please check all that apply.)*

___Registered dietitian (RD)

___Certified diabetes educator (CDE)

___Nurse practitioner or certified nurse specialist

___Health educator

___Office nurse (RN)

___Hospital-based diabetes education program

___American Diabetes Association-recognized diabetes education program

___Other _____

■ Which of the following best describes the type of person to whom you refer your NIDDM patients for diet counseling most often? *(Please check ONE answer.)*

___Registered dietitian (RD)

___Nurse practitioner or certified nurse specialist

___Office nurse (RN)

■ Is the person to whom you refer most often a certified diabetes educator (CDE)? ___Yes ___No ___Don't know ___Don't refer

For the remainder of the questionnaire we will use the term "diet counselor" to mean the person to whom you refer patients most often for education/counseling.

■ Please estimate approximately what percentage of your newly diagnosed NIDDM patients you refer to a diet counselor for dietary management of diabetes: _____ %

■ Based on your experience, to what extent are the following factors problems when you use diet therapy with NIDDM patients? *(Please check one column per line.)*

	Not a problem	Small problem	Moderate problem	Significant problem	Over-whelming
Inadequate insurance reimbursement for diet education and counseling provided by physician					
Inadequate insurance reimbursement for diet education and counseling provided by diet counselor					
Patient can't afford diet education/counseling					
Diet counselor too far from patient					
Diet counselor's hours inconvenient					
Lack of access to diet education materials (e.g. books, brochures)					
Inadequate training in diet therapy during medical school					
Other _____					

Please go to next page —>

For the following case studies, please think about your experience with similar types of patients. This is not a test; there are no right or wrong answers. Answer the questions based on your own practice.

MRS. A

Mrs. A: Mrs. A is a 58 y/o female, newly diagnosed with NIDDM, 5'6" tall, and weighs 210 lb. She is married with two grown children and employed as a receptionist. She has no other medical problems or risk factors. Her fasting blood glucose today is 240 mg/dl and her glycosylated hemoglobin is 9.8 (non-diabetic range 4.0-8.0).

■ In your clinical experience, how likely is it that "diet only" therapy would achieve your diabetes management goals with this patient over the next year? *(Please check one answer.)*

___ Very unlikely ___ Not likely ___ Neutral ___ Likely ___ Very likely

■ How likely would you be to do the following for Mrs. A at this point in time:
(Please check one response per item.)

	Very unlikely	Not likely	Neutral	Likely	Very likely
Recommend weight loss in general					
Set specific weight loss goal					
Recommend a specific level of caloric intake (e.g. 1500 kcal)					
Provide a diet exchange sheet					
Refer to a diet counselor for diet education/ counseling					
Refer to a commercial weight loss program (e.g. Weight Watchers™)					
Advise an exercise program					
Prescribe oral antidiabetic medications					
Prescribe insulin					
Refer to a diabetes specialist					
Other:_____					

■ Which of the following types of diets (if any) would you recommend to this patient? *(Please check all that apply.)*

___ADA diet
___Reduced/low calorie
___Low fat
___Low cholesterol
___High fiber
___Low added sugar
___Low protein
___Would let diet counselor decide on type of diet
___Other_____
___ Would not prescribe diet

■ Thinking about Mrs. A, how would you evaluate the success or failure of your prescribed therapy? *(Please check all that apply.)*

___ Patient satisfaction
___ Patient's self-reported regimen adherence
___ Weight change
___ Self-monitored blood glucose results
___ Urine glucose results
___ Fasting blood glucose results
___ Post-prandial glucose results
___ Glycosylated hemoglobin results
___ Other _____

■ Based on your experience, how much influence do you feel you have over the success of diet therapy for this patient? *(Please check one answer.)*

___ Virtually none ___ Little ___ Moderate ___ Substantial ___ Almost total

■ Thinking about your experience in general, to what extent are the following factors problems when you use diet therapy with NIDDM patients? *(Please check one column per line.)*

	Not a problem	Small problem	Moderate problem	Significant problem	Over-whelming
Patient not interested in diet therapy					
Patient doesn't follow prescribed diet					
Patient's educational status					
Patient's diet not supported by family					
Other _____					

MRS. J

Mrs. J: Mrs. J is a 62 y/o female with NIDDM of three years duration who has been your patient for one year. She is 5'3", weighs 160 lb. (180 lb. at diagnosis), is married, and is employed as a data entry operator. Her glycosylated hemoglobin (Ghb) is 10.4 today (non-diabetic range 4.0 - 8.0); her fasting blood glucose today is 260 mg/dl. At her last visit six months ago, her Ghb was 10.6 and she received nutrition education and counseling from an office nurse. Her diabetes is currently managed with diet only. She has mild hypertension controlled with enalapril and takes no other medications.

■ At this point in time, how likely would you be to do the following for Mrs. J:
(Please check one response per item.)

	Very unlikely	Not likely	Neutral	Likely	Very likely
Continue current diet therapy					
Alter diet therapy in the following ways:					
Recommend general weight loss					
Set specific weight loss goal					
Recommend specific level of caloric intake (e.g. 1500 kcal)					
Refer to diet counselor for education/counseling					
Refer to commercial weight loss program (e.g. Weight Watchers™)					
Other change to diet therapy _____					
Advise exercise program					
Prescribe oral antidiabetic medications					
Prescribe insulin					
Refer to diabetes specialist					
Other _____					

■ How much do you think diet therapy will contribute to the diabetes control of Mrs. J over the next year? ***(Please check one answer.)***

___None ___A little ___Moderately ___Significantly ___Very much

■ Based on your experience, how much influence do you feel <u>you</u> have over the success of diet therapy for this patient? *(Please check one answer.)*

___ Virtually none ___ Little ___ Moderate ___ Substantial ___ Almost total

■ Thinking about your experience <u>in general</u>, to what extent are the following factors problems when you use diet therapy with NIDDM patients? *(Please check one column per line.)*

	Not a problem	Small problem	Moderate problem	Significant problem	Over-whelming
Diabetic diets are too expensive					
Diet counselor doesn't know enough about dietary management of NIDDM					
Diet counselor unrealistic with patient					
Diet counselor does not communicate results of visits with me					
Other_____					

■ In the past year, have you been involved in a physician residency training program? ___ Yes ___ No

■ In the past year, have you served as a preceptor for medical students? ___ Yes ___ No

■ Please estimate what percentage of your practice is enrolled in each of the following types of health care plans:

Medicaid _____% Pre-paid / "managed care" (<u>not</u> Medicaid) _____%

Medicare _____%

■ Check the category that best describes your practice: *(Please check one answer.)*

___ Individual (solo) practice
___ Small group practice (< 5 physicians)
___ Large group practice (5 or more physicians)
___ Hospital-owned ambulatory clinic
___ Community-owned ambulatory clinic
___ Academic or government hospital
___ Other _____

Please go to next page —>

■ In general, what is the biggest problem you face when considering diet therapy for your NIDDM patients? Please write your answer in the space below.

Thank you for helping us with this important project. Please return this questionnaire in the envelope provided or to Indiana University School of Medicine, Attn: S. Kraft, 250 University Blvd., Room 122, Indianapolis IN 46202.

Appendix B: Adjusted Frequencies for Each Questionnaire Item

This questionnaire will take TEN MINUTES to complete. Results will be used in the re-evaluation of training programs at the Indiana University School of Medicine and in program decisions at the Indiana State Department of Health. There are no "right" answers – we want to know what you think. Thank you for your help!

DEFINITIONS

This survey focuses on non-insulin-dependent diabetes mellitus and diet therapy. For the purposes of this questionnaire we are using the following definitions:

Non-insulin-dependent diabetes mellitus (NIDDM) – Also known as type II diabetes; generally diagnosed after the age of 30; highly correlated with obesity; treated with diet, exercise, oral antidiabetic agents, and/or insulin.

Diet therapy – Nutrition management of diabetes involving patient education and counseling. Designed to facilitate diabetes control through appropriate food choices.

Please answer the questions based on your own background and experience with NIDDM patients. All information will remain entirely confidential.

■ What is your primary specialty? *(Please check one answer.)*
n:

267 Family practice
40 General practice
120 General internal medicine
N/A Other_____

■ When did you graduate from medical school? mean: 19 75 (1937-93)

■ Do you routinely provide patient care (i.e., are you in active practice)?
(Please check one answer.)

___ NO —> If NO, you need not complete the remainder of this questionnaire. Please return this form in the envelope provided.

427 YES —> Go to next question . . .

■ Are you currently treating patients with NIDDM? *(Please check one answer.)*

___NO —> If NO, you need not complete the remainder of this questionnaire. Please return this form in the envelope provided.

427 YES —> If YES, approximately how many people with NIDDM do you treat per year?
46 1-25 86 26-50 132 51-100 151 > 100

■ In general, when you counsel NIDDM patients about diet, which of the following describe(s) what you do? *(Please check all that apply.)*

% of respondents checking each answer:

71% Obtain information on patient's current eating behavior

69% Provide educational brochure or book

66% Set specific calorie intake goals

52% Set specific weight goals

12% Develop meal plans with patient

59% Provide diet exchange sheet

33% Other _____

10% Do not counsel patients myself

■ Please estimate the percentage of your NIDDM patients for whom you yourself provide the majority of the dietary education and counseling: $38 \pm 1\%$ (n=379)

■ When you don't counsel patients about diet yourself, which of the following describe(s) your reason(s) for not counseling about diet? *(Please check all that apply.)*

% of respondents checking each answer:

45% Don't have time

25% Do not have training to do diet counseling

82% Good diet counselor /education program available

12% Not comfortable doing diet counseling

13% Not reimbursed for diet counseling

8% Other _____

6% N/A – always counsel patients myself

■ Which of the following types of professionals and/or programs are available to you for dietary counseling/education referral? *(Please check all that apply.)*

% of respondents checking each answer (n=392):

86 Registered dietitian (RD)

15 Nurse practitioner or certified nurse specialist

26 Office nurse (RN)

35 American Diabetes Association-recognized diabetes education program

32 Certified diabetes educator (CDE)

5 Health educator

67 Hospital-based diabetes education program

___ Other _____

■ Which of the following best describes the type of person to whom you refer your NIDDM patients for diet counseling most often? *(Please check ONE answer.)*

% of respondents checking each answer (n=375):

76 Registered dietitian (RD)

5 Nurse practitioner or certified nurse specialist

6 Office nurse (RN)

10 Other _____

3 Do not refer

■ Is the person to whom you refer most often a certified diabetes educator (CDE)? **(n = 389)**

42% Yes 16% No 41% Don't know 2% Don't refer

For the remainder of the questionnaire we will use the term "diet counselor" to mean the person to whom you refer patients most often for education/counseling.

■ Please estimate approximately what percentage of your newly diagnosed NIDDM patients you refer to a diet counselor for dietary management of diabetes:

65 ± 1 %
(n = 427)

■ Based on your experience, to what extent are the following factors problems when you use diet therapy with NIDDM patients? *(Please check one column per line.)*

	Not a problem	Small problem	Moderate problem	Significant problem	Over-whelming
Inadequate insurance reimbursement for diet education and counseling provided by physician (n = 385)	32%	26%	18%	21%	3%
Inadequate insurance reimbursement for diet education and counseling provided by diet counselor (n = 376)	25%	23%	25%	25%	2%
Patient can't afford diet education/counseling (n = 387)	20%	25%	25%	24%	6%
Diet counselor too far from patient (n = 386)	60%	27%	9%	3%	1%
Diet counselor's hours inconvenient (n = 385)	47%	35%	16%	2%	0%
Lack of access to diet education materials (e.g. books, brochures) (n = 386)	62%	27%	10%	1%	0%
Inadequate training in diet therapy during medical school (n = 383)	29%	34%	21%	15%	2%
Other _____ (n = 19)	4%	15%	16%	39%	25%

Please go to next page —>

For the following case studies, please think about your experience with similar types of patients. This is not a test; there are no right or wrong answers. Answer the questions based on your own practice.

MRS. A

Mrs. A: Mrs. A is a 58 y/o female, newly diagnosed with NIDDM, 5'6" tall, and weighs 210 lb. She is married with two grown children and employed as a receptionist. She has no other medical problems or risk factors. Her fasting blood glucose today is 240 mg/dl and her glycosylated hemoglobin is 9.8 (non-diabetic range 4.0-8.0).

■ In your clinical experience, how likely is it that "diet only" therapy would achieve your diabetes management goals with this patient over the next year? *(Please check one answer.)* **(n = 407)**

15% Very unlikely 44% Not likely 14% Neutral 19% Likely 8% Very likely

■ How likely would you be to do the following for Mrs. A at this point in time:
(Please check one response per item.)

	Very unlikely	Not likely	Neutral	Likely	Very likely
Recommend weight loss in general (n = 410)	1%	1%	1%	13%	84%
Set specific weight loss goal (n = 410)	2%	9%	12%	30%	48%
Recommend a specific level of caloric intake (e.g. 1500 kcal) (n = 411)	1%	6%	7%	28%	58%
Provide a diet exchange sheet (n = 402)	5%	8%	10%	24%	54%
Refer to a diet counselor for diet education/ counseling (n = 403)	3%	7%	10%	25%	55%
Refer to a commercial weight loss program (e.g. Weight Watchers™) (n = 394)	32%	28%	25%	11%	4%
Advise an exercise program (n = 408)	1%	2%	6%	37%	55%
Prescribe oral antidiabetic medications (n = 401)	8%	30%	16%	30%	15%
Prescribe insulin (n = 401)	65%	29%	7%	2%	1%
Refer to a diabetes specialist (n = 401)	61%	29%	7%	2%	1%
Other:_____ (n = 8)	12%	12%	18%	23%	35%

■ Which of the following types of diets (if any) would you recommend to this patient? *(Please check all that apply.)*

% of respondents checking each answer (n = 409):

87 ADA diet

50 Reduced/low calorie

58 Low fat

42 Low cholesterol

35 High fiber

30 Low added sugar

39 Low protein

23 Would let diet counselor decide on type of diet

2 Other _____

0.2 Would not prescribe diet

■ Thinking about Mrs. A, how would you evaluate the success or failure of your prescribed therapy? *(Please check all that apply.)*

% of respondents checking each answer (n = 410):

39 Patient satisfaction

33 Patient's self-reported regimen adherence

88 Weight change

66 Self-monitored blood glucose results

7 Urine glucose results

69 Fasting blood glucose results

31 Post-prandial glucose results

95 Glycosylated hemoglobin results

1 Other _____

■ Based on your experience, how much influence do you feel you have over the success of diet therapy for this patient? *(Please check one answer.)*

(n = 409)

2% Virtually none 19% Little 51% Moderate 27% Substantial 1% Almost total

■ Thinking about your experience in general, to what extent are the following factors problems when you use diet therapy with NIDDM patients? *(Please check one column per line.)*

	Not a problem	Small problem	Moderate problem	Significant problem	Over-whelming
Patient not interested in diet therapy(n = 408)	3%	19%	40%	32%	6%
Patient doesn't follow prescribed diet (n = 409)	0.3%	3%	22%	58%	17%
Patient's educational status (n = 408)	4%	28%	46%	19%	3%
Patient's diet not supported by family (n = 407)	4%	16%	41%	33%	7%
Other _____ (n = 15)	0%	7%	18%	28%	48%

MRS. J

Mrs. J: Mrs. J is a 62 y/o female with NIDDM of three years duration who has been your patient for one year. She is 5'3", weighs 160 lb. (180 lb. at diagnosis), is married, and is employed as a data entry operator. Her glycosylated hemoglobin (Ghb) is 10.4 today (non-diabetic range 4.0 - 8.0); her fasting blood glucose today is 260 mg/dl. At her last visit six months ago, her Ghb was 10.6 and she received nutrition education and counseling from an office nurse. Her diabetes is currently managed with diet only. She has mild hypertension controlled with enalapril and takes no other medications.

■ At this point in time, how likely would you be to do the following for Mrs. J:
(Please check one response per item.)

	Very unlikely	Not likely	Neutral	Likely	Very likely
Continue current diet therapy (n = 361)	18%	24%	10%	21%	27%
Alter diet therapy in the following ways:					
Recommend general weight loss (n = 372)	4%	8%	9%	45%	35%
Set specific weight loss goal (n = 378)	5%	12%	12%	44%	28%
Recommend specific level of caloric intake (e.g. 1500 kcal) (n = 385)	5%	6%	14%	42%	33%
Refer to diet counselor for education/counseling (n = 380)	6%	9%	13%	33%	39%
Refer to commercial weight loss program (e.g. Weight Watchers™) (n = 362)	33%	31%	24%	9%	3%
Other change to diet therapy _____ (n = 105)	25%	20%	29%	16%	10%
Advise exercise program (n = 399)	2%	1%	4%	46%	46%
Prescribe oral antidiabetic medications (n = 407)	1%	1%	1%	38%	59%
Prescribe insulin (n = 372)	53%	36%	8%	2%	1%
Refer to diabetes specialist (n = 372)	57%	27%	11%	3%	1%
Other _____ (n = 8)	11%	22%	25%	16%	25%

■ How much do you think diet therapy will contribute to the diabetes control of Mrs. J over the next year? *(Please check one answer.)*
(n = 404)

2% None 41% A little 35% Moderately 17% Significantly 5% Very much

■ Based on your experience, how much influence do you feel you have over the success of diet therapy for this patient? *(Please check one answer.)*

4% Virtually none 31% Little 51% Moderate 14% Substantial 0 Almost total

■ Thinking about your experience in general, to what extent are the following factors problems when you use diet therapy with NIDDM patients? *(Please check one column per line.)*

	Not a problem	Small problem	Moderate problem	Significant problem	Over-whelming
Diabetic diets are too expensive (n = 409)	45%	32%	21%	2%	0.3%
Diet counselor doesn't know enough about dietary management of NIDDM (n = 402)	74%	21%	4%	2%	0.3%
Diet counselor unrealistic with patient (n = 400)	51%	32%	12%	4%	1%
Diet counselor does not communicate results of visits with me (n = 400)	49%	25%	16%	9%	1%
Other_____ (n = 19)	0%	4%	0%	48%	47%

■ In the past year, have you been involved in a physician residency training program? (n = 412) 33% Yes 66% No

■ In the past year, have you served as a preceptor for medical students? (n = 413) 38% Yes 62% No

■ Please estimate what percentage of your practice is enrolled in each of the following types of health care plans:
[mean responses ± s.d. (n = 426)]

Medicaid 12 ± 1%

Medicare 29 ± 1%

Pre-paid / "managed care" (not Medicaid) 25 ± 1%

■ Check the category that best describes your practice: *(Please check one answer.)*
(n = 412; responses are unadjusted for responder demographics)

35% Individual (solo) practice

23% Small group practice (<5 physicians)

26% Large group practice (5 or more physicians)

9% Hospital-owned ambulatory clinic

1% Community-owned ambulatory clinic

4% Academic or government hospital

3% Other _____

■ In general, what is the biggest problem you face when considering diet therapy for your NIDDM patients? Please write your answer in the space below.

(n = 361)

Patient noncompliance	53%	Physician's lack of training	3%
Patient attitude	16%	Not enough time	3%
Difficulty of behavior change	8%		
Patient understanding	4%	Society's acceptance of unhealthy eating	2%
Cost/reimbursement factors	2%		
No dietitian available	1%	Diet therapy doesn't work	2%
Dietitian not adequate	0.3%	Miscellaneous	5%
Family/support issues	0.3%		

Thank you for helping us with this important project. Please return this questionnaire in the envelope provided or to Indiana University School of Medicine, Attn: S. Kraft, 250 University Blvd., Room 122, Indianapolis IN 46202.